

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 06-132236

(43)Date of publication of application : 13.05.1994

(51)Int.Cl.

H01L 21/205

H01L 33/00

H01S 3/18

(21)Application number : 04-282005

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(22)Date of filing : 20.10.1992

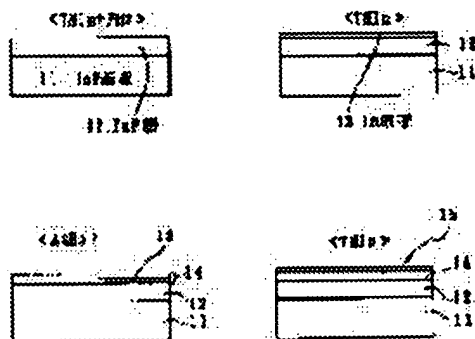
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## (54) MANUFACTURE OF SEMICONDUCTOR DEVICE

## (57)Abstract:

**PURPOSE:** To prevent the dropping of group V elements from crystal surface or from the vicinity of the surface and prevent their reaction with other group V elements present in the atmosphere by depositing group III atoms of monoatoms or a molecular layer on the surface of a semiconductor layer and by giving a heat treatment at a temperature not lower than the temperature of this deposit.

**CONSTITUTION:** On the surface of InP substrate 11, an InP layer 12 which becomes a barrier layer is grown at 600° C. Then, a TMIn pulse is supplied to the top of the InP layer 12, a layer of In atom 13 is deposited by ALE method for covering the surface of the InP layer 12, and the temperature inside a reaction chamber is lowered to 500° C. In succession, an AsH<sub>3</sub> is supplied, As atoms are laminated on the In atoms 13 by ALE method thereby forming an InAsI molecular layer 14, and the Asia is stopped. Immediately after this, a TMIn pulse is supplied, one layer of In atoms 15 is formed on the top surface of the InAsI molecular layer 14, and the temperature of reaction chamber is raised again to 600° C. By doing this, a protection layer of group III atoms is deposited on the surface of the semiconductor film where the group V elements are exposed.



## LEGAL STATUS

[Date of request for examination] 11.12.1998

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 3137767

[Date of registration] 08.12.2000

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]